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Descrizione di Tre Specie nuove del Genere Atractocerus appartenenti alle Collezioni Museo Civico di Genova. By R. Gestro. 8vo, pp. 4.

Osservazioni sopra Alcune Specie Italiane del Genere Cychrus. By R Gestro. 8vo, pp. 7.

Enumerazione dei Cetonidi, raccolti nell'Arcipelago Malese e nella Papuasia, dai Signori G. Doria, O. Beccari, e L. M. d'Albertis. By R. Gestro. 8vo, pp. 31. Appendix, pp. 28.

Note sopra Alcuni Coleotteri appartenenti alle Collezione del Museo Civico di Genova. By Dr. R. Gestro. 8vo, pp. 13.

Note sopra Alcuni Coleotteri appartenenti alle Collezione del Museo Civico di Genova. Nuova Specie del Genere Zanthe. By Dr. R. Gestro. 8vo, pp. 8.

GENERAL NOTES.

BOTANY.[1]

Fertilization of Gentiana Andrewsii. — Humble-bees are in the habit of entering bodily into the flower of this gentian, forcing open the mouth of the corolla to do so where this is closed, as it is in the absence of sunshine, and the anthers open before the stigmas separate to expose the pollen-receiving surface; so it is evident that cross-fertilization is provided for. Our correspondent, Mr. M. W. Vandenberg, of Fort Edward, N. Y., communicates the result of some observations which show that this flower has likewise an arrangement for self-fertilization. The short tube of cohering and extrorsely opening anthers is higher than the stigma when the blossom first opens. The pistil afterwards lengthens, so that its apex protrudes; the broad and introrse stigmas now separate, at first moderately, but at length they diverge strongly and become revolute, so as to bring a portion of the broad stigmatic surface into contact with the outer face of the anther tube, which usually is still covered with abundance of pollen. The pollen appears to retain its freshness for a long time, and in this slow movement of revolution of the stigmas they are seen to take up considerable masses of the moist pollen. Those stigmas, therefore, which have failed to receive extraneous pollen from bees during the first day or two of anthesis, will afterwards secure it from their own anthers. "Get fertilized, cross-fertilized if you can, self-fertilized if you must, is nature's golden rule for flowers." — A. Gray.

Origin of Varieties; Two Illustrations. — Eight or ten years ago, on a plot of ground where I had grown beet seed of the early turnip variety, after the crop had been gathered from the seed that had dropped on the ground, there sprang up thousands of young plants. A large proportion of these lived through the winter. It is my impression that they had the protection of a thick growth of chick-weed. In the following spring, when plowing, these plants were so forward I left a portion of the piece unplowed, with the view of obtaining a crop of early beets. As the plants grew quite a number pushed seed shoots, and as the season advanced ripened a small crop of seed, which I saved in a mass, and the next season planted a portion of it. Here I will note, that all the beets from which the first crop of seed grew were of one variety, and being for seed purposes were very carefully selected at that time; and that the seed that was gathered from them in the autumn when planted the next season produced a crop pure and true to name; also, that the field in which the two crops of seed grew was in the middle of a great pasture, very isolated; and finally, that no other beet seed was raised there. Now, as to the result, the beets raised from this second crop of seed were, to use an expressive word, "everything," ranging all the way from a small, very dark-fleshed variety, through a score or more of kinds of various color, form, and texture, down to a light-fleshed, medium long variety of mangel-wurzel, which, as farmers know, is a very coarse-fleshed kind raised for the feeding of stock.

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[1] Conducted by Prof. G. L. Goodale.

My other illustration is an experiment with Indian corn. With this I have had no personal experience, but a very intelligent correspondent writes me, that seeing occasionally the spindle of his corn (he was raising the Dutton variety) replaced by small ears, he was led from curiosity to save and plant the kernels of some of these. The result was, he obtained a vast number of entirely new varieties each having characteristics of its own. I wonder if other experimenters (we farmers, mind you, don't propose to leave all the experimenting with you men of science!) may not have something to put on record about — say the short-horn variety of carrot, which probably more than any other tends to push occasional seed shoots the first season? — J. J. H. GREGORY.

IPOMŒA SETOSA. — We succeeded in growing the rare plant, *Ipomœa setosa*, in Florida last year. The seed was found among some "Java" coffee and planted in rich soil. On the 17th of May, when we left Florida for the North, the plant was about six inches high. Upon our return, the first of November following, to our surprise the plant had completely covered a small live-oak. The main stem of the vine was about fifteen feet in length and six inches in circumference at the base, with numerous large branches radiating in all directions. Had the support been taller the plant would have climbed much higher; as it was, it clambered about in all directions, entirely covering the tree, the various subdivisions reaching the top of the tree and falling back to the ground, thus making more than thirty feet of length. The support was a living tree, but the great weight of the vine broke every branch, leaving the bare trunk standing.

Frost came the first of December, cutting it down while still a mass of bloom, and great clusters of unripe seed, fully enough to have made a peck of ripe seed, if frost had kept off as late as the year before. As it was, we did not save a pint of seed.

The flowers were large and of a bright pink color; leaves large and lobed, and the stems and peduncles covered with soft prickles.

I sent specimens of the foliage and unripe fruit to Professor Sargent, Director of the Botanic Garden of Harvard University, for identification. His reply is as follows: "Your morning-glory seems to be *Ipomœa setosa* Lindl., a little-known species; it occurs in Jamaica as an introduced plant from Brazil, while the flora of Brazil is doubtful of its nativity. At any rate you have a most interesting plant. If possible send good herbarium specimens of flowers and foliage, and by all means a good supply of ripe seed. You will do well to plant several seeds in order to secure a crop of seed for next year for general distribution, as there is no chance that seed will ripen here, either in the garden or under glass. This plant flowered in England as long ago as 1818, but is long since lost to cultivation. So you will be conferring a great benefit on cultivators by re-introducing it."

All the seeds that we can spare this year, we shall send to Professor Sargent for him to distribute as he thinks best.

The remarkable growth of the plant was in a great measure owing to the soil in which it grew. It was planted on a terrace adjoining the St. John's River. The terrace is made mostly from muck taken from the river. Some weeds grew here to the size of small trees. One amaranth attained the height of twenty-five feet and eighteen inches in circumference, and several others approximated this. — MARY TREAT.

OBJECTS OF THE DIVERSITIES IN THE MODE OF ARRANGEMENT OF THE FLORAL ORGANS. — In the paper by Dr. Masters, elsewhere referred to, occurs the following passage which will be of interest to our readers: "The alternate position seems to be in most instances a provision for ensuring space to closely packed organs, so as to prevent undue amount of pressure on the growing tissues. In cases where the development of the stamens lags behind that of the petals, the question of space is not of so much moment as under other circumstances. It may often be an advantage to the plant to have the stamen concealed in the cavity of the petal, ... where such an arrangement may be beneficial either for protection's sake, or in various manners connected with fertilization. In other cases the existing arrangement may be a relic of some ancestral condition which has now lost its significance; or, on the other hand, could we but read it aright, it might offer a forecast of some future development."

BOTANICAL PAPERS IN RECENT PERIODICALS. — *Journal of the Linnæan Society, Botany.* December 15th. T. H. Potts, Habits of Filices observed about the Malvern Hills, Canterbury, New Zealand. S. H. Vines, On the Digestive Ferment of Nepenthes. (The following facts are regarded by the author as established by his experiments: (1.) The glands of the pitchers of Nepenthes contain a digestive ferment which is soluble in glycerine, and which can exert its digestive action only in the presence of acid. The fact of digestion was clearly made out by Von Gorup-Besanez, May 22, 1876; (2.) the digestive ferment exists at first in the gland-cells of the pitchers, in combination with some other body, as zymogen, and this zymogen is split up by the action of dilute acid, the free ferment making its appearance as the result of this decomposition. The author further states, that the experiments run perfectly parallel with those of Ebstein and Grützner on the stomach, and with those of Heidenhain on the pancreas.) J. M. Crombie, An Enumeration of Lichens from Rodriguez Island. (Twenty-five new species are described.) W. Archer, On Fresh-Water Algæ from Kerguelen's Land. (According to the author, who found nothing new in the collection, the algal flora of this remote and isolated spot is not unlike that of England. Mr. Reinsch described early in this year three new genera and thirty new species from this region.) Professor Dickie, Algæ from the Coasts of Japan, and from Juan Fernandez. Dr. Masters, On the Superposed Arrangement of the Parts of the Flower. (An attempt to explain anteposition by referring special cases to the following causes: (1.) Superposition of whorls. (2.) Spiral arrangement of parts, the calyx forming a complete cycle, followed by the corolla in like manner. (3.) Enation, or outgrowth, and chorisis, or division. (4.) Abortion, the most common cause. (5.) Multiplication of parts. (6.) Interposition. (7.) Substitution of one organ by another. (8.) Torsion of the axis.)

Flora, No. 3. Westermaier, The First Cell Division in the Embryo of Capsella Bursa-Pastoris. Nylander, On New Cuban Lichens (Species of Lecanora).

Botanische Zeitung, Nos. 43 and 44 not yet at hand. No. 45. Kienitz-Gerloff, On the Genetic Connection of Mosses with Vascular Cryptogams and Manerogams. (Continued in No. 46.)

ZOÖLOGY.

THE CRUSTACEA OF LAKE TITICACA. — In the Naturalist (x., 380) we have called attention to the exploration of Lake Titicaca, by Messrs. Agassiz and Garman, and alluded to the marine nature of the crustacean fauna of this lake. Since then Mr. W. Faxon has published, in the Bulletin of the Museum of Comparative Zoölogy, descriptions and figures of the crustacea of the lake. "Excepting," he remarks, "a species of *Cypris*, all the specimens collected belong to one amphipodous genus, *Allorchestes*, which had hitherto afforded but one or two authentic fresh-water species, ranging from Maine to Oregon and the Straits of Magellan. Seven new species are described in this paper from Lake Titicaca. Several of them are remarkable among the *Orchestidæ* for their abnormally developed epimeral and tergal spines. Some are also noteworthy as comparatively deep-water forms of a family commonly regarded as preëminently littoral. I believe that no *Orchestidæ* have heretofore been found at a depth so great as sixty-six fathoms,[1] unless it be *Orchestia* (*Talitrus*) *Brasiliensis* Dana, and *Nicea media* Dana,

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[1] The greatest depth of the lake is 154 fathoms.